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APPARATUS FOR STUDYING EFFECT OF SUBMERSION ON SMALL INSECTS

By Dwight F. Barnes, Division of Fruit Insect Investigations

As a part of studies on the dried-fruit beetle (Carpophilus hemipterus L.) it was desirable to examine the effect of submersion in water for varying lengths of time. Several methods were tried to secure complete submersion, but difficulty was experienced in excluding all air from test vials and in keeping the insects out of enclosed air bubbles. Eventually a simple method was evolved that excluded all air except that trapped on the insect itself and by which insects in a series of vials could be submerged rapidly.

When exposures of varying lengths were to be tested, enough vials were prepared so that one or more might be removed at the end of each exposure period. Glass vials three quarters of an inch in diameter by  $3\frac{1}{4}$  inches high were used for the work. The required number of insects were placed in each vial and the vial was filled with water to within one-eighth inch of the top. A piece of dry finely woven cheesecloth was then drawn over the lower end of a cork stopper of suitable size which had been perforated with a quarter-inch hole. The cloth-covered perforated stopper was used to close the vial. Enclosed air and excess water were pushed through the perforation, and the vial was left completely filled and free from air. Filled and stoppered vials were placed upright in a glass battery jar and covered with water to a depth of 1 inch or more throughout the exposure.

In preparing the stoppers it is well to use only the top half of an ordinary stopper, as too much cork will cause the vial to float in the water bath.

